

Patent Claims

1. Optical compensator for liquid crystal displays comprising
- 5 - at least one O plate retarder, and
- at least one twisted A plate retarder with a twist angle ϕ of
 more than 90° .
- 10 2. Optical compensator according to claim 1, characterized in that
 the average tilt angle θ_{ave} in said O plate retarder is from 2 to 88° .
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- 15 3. Optical compensator according to claim 1 or 2, characterized in that
 the twist angle ϕ in said twisted A plate retarder is at least 360° .
4. Optical compensator according to at least one of claims 1 to 3,
 characterized in that the tilt angle in said O plate retarder varies
 monotonously in a direction perpendicular to the plane of the
 film from a minimum value θ_{min} at one surface of the film to a
20 maximum value θ_{max} at the opposite surface of the film.
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5. Optical compensator according to claim 4, characterized in that
 θ_{min} is from 0 to 80° .
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- 25 6. Optical compensator according to claim 4 or 5, characterized in
 that θ_{max} is from 10 to 90° .
7. Optical compensator according to at least one of claims 1 to 6,
 characterized in that the thickness of said O plate and/or twisted
30 A plate is from 0.1 to 10 μm .
8. Optical compensator according to at least one of claims 1 to 7,
 characterized in that the optical retardation of said O plate
 and/or twisted A plate is from 6 to 300 nm.
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9. Optical compensator according to at least one of claims 1 to 8, characterized in that said O plate comprises a linear or crosslinked polymerized liquid crystalline material with a tilted or splayed structure.

10. Optical compensator according to at least one of claims 1 to 9, characterized in that said twisted A plate comprises a linear or crosslinked polymerized chiral liquid crystalline material with a helically twisted structure.

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11. Optical compensator according to claim 10, characterized in that the helical pitch of the chiral liquid crystalline material in said twisted A plate is less than 250 nm.

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12. A liquid crystal display device comprising the following elements

- a liquid crystal cell formed by two transparent substrates having surfaces which oppose each other, an electrode layer provided on the inside of at least one of said two transparent substrates and optionally superposed with an alignment layer, and a liquid crystal medium which is present between the two transparent substrates,
- a polarizer arranged outside said transparent substrates, or a pair of polarizers sandwiching said substrates, and
- at least one optical compensator according to at least one of claims 1 to 11 being situated between the liquid crystal cell and at least one of said polarizers,

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it being possible for the above elements to be separated, stacked, mounted on top of each other, coated on top of each other or connected by means of adhesive layers.

13. Twisted A plate with a helical pitch of 250 nm or less for use as negative C retarder.

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- 5 14. Twisted A plate according to claim 13 comprising an oriented polymerized composition, said composition comprising at least one achiral polymerizable mesogenic compound and at least one chiral compound that is selected from non-polymerizable chiral compounds, polymerizable chiral mesogenic compounds and polymerizable chiral non-mesogenic compounds.

- Sub A4
10 15. Liquid crystal display comprising a liquid crystal cell and at least one twisted A plate according to claim 13 or 14.

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